



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/523,009

02/01/2005

Takashi Fukuda

040894-7131

6526

9629 7590 07/10/2008
MORGAN LEWIS & BOCKIUS LLP
1111 PENNSYLVANIA AVENUE NW
WASHINGTON, DC 20004

EXAMINER

VERDERAME, ANNA L

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

07/10/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/523,009	Applicant(s) FUKUDA ET AL.	
	Examiner ANNA L. VERDERAME	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/14/2008, and 05/13/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawano et al. 2001/0002895.

Kawano et al. '895 teaches a high density recording/reproducing method (0039). A polarization sensitive layer 12 having a thickness of at least 10 micrometers is used (0090). Description of acceptable materials for the polarization sensitive layer 12 including disclosure of azo benzene is found at (0093-0095). Formation of a grating is described at (0097 and 0099). See embodiments 1-7 and figures 6-9.

On page 3 applicant argues that the claimed invention is directed to a method and medium wherein a material on a film is moved to form a relief pattern thereon by irradiating a light onto azo benzene, and that this disclosure is different from that in Kawano et al. This is incorrect. Claim 1 recites an anisotropy formed by irradiating a thin polymer film having an azobenzene site with light. This anisotropy is disclosed in Kawano at (0048), (0095) and (0101).

See particularly section 0097 which recites that "In a portion of high light intensity azo benzene is strongly photoexcited; therefore a lot of cis-form azo benzene molecules are generated. In contrast in a portion of low-intensity there are a small number of cis-form azo benzene molecules. Accordingly, a **grating** of the absorption

corresponding to the light intensity modulation is formed.” Cis-trans isomerization is the “movement” that the applicant discusses. The difference in refractive index allows for information to be recorded and read.

A polarization hologram is also described in which molecules having the same polarization as the signal beam are excited(0098-0099).

These two recording methods are based on the polarization directions of the signal beams(0101).

Periodicity of the grating as required by the claims is illustrated in figure 3(b) and figure 14.

Figures 2a-2c show that azo benzene can be free or tethered in the polymer film.

The applicant argues that Kawano is directed to formation of a volume hologram whereas applicant's method is directed to forming a relief pattern. It is the position of the examiner that the formation of a volume hologram also results in a relief pattern formed on the surface. Further, Kawano explicitly states that he forms a grating. A grating is a surface relief pattern.

It is the position of the examiner that by forming a volume hologram “depth data by the difference in depth in the pattern is added”. The claims lack any limitation requiring the recording of the gratings/lines in more than one (multiple) orientations. The claims only require plurality of data and do not speak to them necessarily having different orientations.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. 2003/0141441 in view of Sugiura et al. JP-05-197959(machine translation provided).

Kawano et al. '441 teaches a method for forming a grating in a polarization sensitive material in embodiment 1(003600059). Use of azo benzene (0048). Linearly polarized light is used (0061).

Sugiura et al. teaches a high density recording method for forming a grating (abstract). Recording method is disclosed at (0008-0010).

It would have been obvious to one of ordinary skill in the art to use the grating formation method taught by Sugiura et al. to form a grating in a polarization sensitive material layer containing azobenzene as disclosed by Kawano et al. and with the reasonable expectation of forming a high density grating.

The applicant argues that the present invention results in a different data recording density per unit area and therefore is different from Sugiura. In the present invention 12 or more angle gradation properties are realized. The examiner notes that these angle gradation properties are not in the claims. The number of angle gradations

based on the arbitrarily chosen step. In the applicant's specification the angle step is chosen to be 30 degrees. Therefore there are 12 steps based on the fact that $360^0/12$ is equal to the chosen step size of 30^0 .

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANNA L. VERDERAME whose telephone number is (571)272-6420. The examiner can normally be reached on M-F 8A-4:30P.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on (571)272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. L. V./
Examiner, Art Unit 1795

/Martin J Angebranndt/
Primary Examiner, Art Unit 1795